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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,269	10/28/2003	Janne Kesala	SEPP14.001C1	4712

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EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1792

NOTIFICATION DATE	DELIVERY MODE
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11/28/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/695,269	Applicant(s) KESALA, JANNE	
	Examiner Richard Bueker	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-41 and 43-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-41 and 43-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____:
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claims 37-41 and 43-45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 37, last two lines, the newly added limitation of "wherein the inlet opening of the at least one inlet conduit is positioned below the outlet opening of the at least one outlet conduit" was not in the specification as originally filed. The "inlet conduit" recited in claim 37 corresponds to the "fourth conduit" described at page 7, lines 20-24 of the specification, and the "outlet conduit" recited in claim 37 refers to the "first conduit" described at page 3, lines 3-7. The dictionary definition of "inlet" is "an opening for intake", and the definition of "outlet" is "a place or opening where something is let out: exit, vent". Therefore, "the inlet opening of the at least one inlet conduit" recited in claim 37 appears to refer to the upstream opening of the fourth conduit through which inactive gas (e.g. nitrogen or argon) enters the fourth conduit. Also, the "outlet opening of the at least one outlet conduit" recited in claim 37 appears to refer to a downstream opening in the first conduit that is located in the reaction chamber 60. Neither the written specification nor the drawings describe the inactive gas intake opening of the fourth conduit as being positioned below the downstream opening in the first conduit that is located in the reaction chamber 60.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37 and 43-45 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ogasawara (JP 08-158053). Ogasawara (see Figs. 1 and 3) discloses a reactant source assembly for generating a gas phase reactant flow comprising a first container 21 having an opening and containing solid reactant matter 25, a lid 22 configured to cover the opening, a second container 8a or 8b having a gas tight container wall enclosing the first container, a gas feed inlet and a gas withdrawal outlet in the container wall of the second container, wherein the opening of the first container opens into the gas space enclosed by the second container. The cover 22 is a mechanical filter for removing unvaporized particles from the reactant vapor produced in the container 21, and the lid 22 comprises a ceramic sinter as recited in claim 45. The outlet of the second container wall is connected to the reaction chamber housing the substrate 4 as recited in claim 43.

Regarding the newly added recitations of “at least one inlet conduit extending through the at least one inlet” and “at least one outlet conduit extending through the at least one outlet”, it is noted that the dictionary definition of “conduit” is “channel through

which something (as a fluid) is conveyed". The inlet and outlet of Ogasawara are designed and intended for conveying a fluid, and therefore they inherently include a channel or conduit that extends through said inlet and said outlet.

Regarding the newly added limitation of "wherein the inlet opening of the at least one inlet conduit is positioned below the outlet opening of the at least one outlet conduit", It is noted that in Ogasawara's Fig. 3 apparatus, the chamber 2 can be considered to be "a second container having a gas tight container wall" as recited in claim 37, with the tube 8b being the "inlet conduit" and the exhaust line conduit (connected to element 10 in Fig. 3) being the "outlet conduit". Also, the presently claimed relative positioning of the inlet opening of the inlet conduit and the outlet opening of the outlet conduit is prima facie obvious in the absence of a showing of unexpected results. This is especially true in view of the fact that the claims fail to make clear which end of the inlet conduit and which end of the outlet conduit are being referred to in this limitation. Regarding this last point, see the discussion in the 35 U.S.C. 112, first paragraph rejection above. Also, it is noted that the Fig. 5b embodiment of applicants' specification specifically illustrates the nitrogen inlet conduit opening as being located above the vaporized reactant outlet line opening. Does applicant intend for his Fig. 5b embodiment to be excluded from coverage by claim 37 as newly amended?

Claims 38, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogasawara (JP 08-158053) alone or taken in view of Tomosawa (JP 06-232048). Regarding claim 38, Ogasawara teaches (see paragraph 11) that the argon carrier gas

flux controls the flow rate of reactant vapor to the reaction chamber, and in view of that teaching it would have been obvious to provide a flow control valve on the carrier gas supply line to control the flow rate of carrier gas into the container 8a or 8b.

Alternatively, Tomosawa (see Fig. 2) teaches the use of an MFC 1 to control the flow rate of a carrier gas into a vaporizer, and in view of Tomosawa, it would have been obvious to provide the carrier gas inlet of Ogasawara with an MFC valve. It is noted that a valve on the carrier gas inlet line controls gas flow through the inlet, and the same valve also controls gas flow through the outlet, as taught by Ogasawara in paragraph 11 as noted above. According to claim 38 as written, the "at least one valve for controlling gas flow through the at least one inlet" can be the same valve as the "at least one valve for controlling gas flow through the at least one outlet". Regarding claims 40 and 41, Ogasawara teaches that the first container is a heat resistant boat. In view of this teaching, it would have been prima facie obvious to one skilled in the art to use any conventionally known heat resistant material as the material of construction for Ogasawara's boat, including quartz (i.e. silica, which is a glass and a ceramic), which is a well known heat resistant material for use in vapor deposition apparatus. It is noted that Ogasawara also teaches (see paragraph 8) that silica is a material that is compatible with his reactant vapors. In view of that teaching one skilled in the art would have been expected that quartz could successfully be used as the material of Ogasawara's boat. Also, Tomosawa teaches that quartz can successfully be used as a material of construction for a vaporizer boat. In view of that teaching it would have been

further obvious that quartz can successfully be used as the material of Ogasawara's boat.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogasawara (JP 08-158053) taken in view of Schultz (3,801,294). Ogasawara's vaporizer is for vaporizing ZrCl_4 (see paragraphs 7-12, for example). Schultz (see the Fig.) also discloses a vaporizer for ZrCl_4 and Schultz teaches that the ZrCl_4 vaporizer can be constructed from stainless steel. It would have been prima facie obvious to construct the second container of Ogasawara's vaporizer of stainless steel as an alternative material of construction because Schultz teaches that stainless steel is a material that was known in the art to be compatible with ZrCl_4 vapor, and that stainless steel could successfully be used to construct a ZrCl_4 vaporizer.

Claims 37-41 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tasaki (6,149,975) taken in view of Ogasawara (JP 08-158053) and Schultz (3,801,294). Tasaki (Fig. 1) discloses a vaporizer comprising a boat containing powdered material to be vaporized, wherein the boat is a first container enclosed in a second container having a gas inlet and an outlet for withdrawing vaporized reactant. Tasaki doesn't discuss the use of a cover on the boat to keep the source material powder in the boat. Ogasawara, however, teaches that such a cover prevents the source material powder from undesirably exiting the boat. It would have been obvious to one skilled in the art to provide a cover for Tasaki's boat to prevent the source material powder from undesirably exiting the boat, particularly when using the vaporizer of Tasaki to produce ZrCl_4 vapor, as taught by Ogasawara and Schultz. Regarding

claims 40 and 41, Ogasawara teaches that the first container is a heat resistant boat. In view of this teaching, it would have been prima facie obvious to one skilled in the art to use any conventionally known heat resistant material as the material of construction for Ogasawara's boat, including quartz (i.e. silica, which is a glass and a ceramic), which is a well known heat resistant material for use in vapor deposition apparatus.

Regarding the newly added limitation of "wherein the inlet opening of the at least one inlet conduit is positioned below the outlet opening of the at least one outlet conduit", It is noted that in Tasaki's Fig. 1 apparatus, the argon gas inlet conduit opening is positioned below the vaporized reactant outlet conduit opening.

Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tasaki (6,149,975) taken in view of Ogasawara (JP 08-158053) and Schultz (3,801,294) for the reasons stated above, and taken in further view of Tomosawa JP 06-232048). Tomosawa teaches that quartz can successfully be used as a material of construction for a vaporizer boat. In view of that teaching it would have been further obvious that quartz can successfully be used as the material of Tasaki's boat.

Applicant has argued that "Ogasawara does not disclose teach or suggest an arrangement in which the inlet opening of the at least one inlet conduit is positioned below the outlet opening of the at least one outlet conduit. In response to applicant's argument, it is noted that in Ogasawara's Fig. 3 apparatus, the chamber 2 can be considered to be "a second container having a gas tight container wall" as recited in claim 37, with the tube 8b being the "inlet conduit" and the exhaust line conduit (connected to element 10 in Fig. 3) being the "outlet conduit". Also, the presently

claimed relative positioning of the inlet opening of the inlet conduit and the outlet opening of the outlet conduit is prima facie obvious in the absence of a showing of unexpected results, especially in view of the fact that the claims fail to make clear which end of the inlet conduit and which end of the outlet conduit are being referred to in this limitation. Regarding this last point, see the discussion in the 35 U.S.C. 112, first paragraph above. Also, it is noted that the Fig. 5b embodiment of applicants' specification specifically illustrates the nitrogen inlet conduit opening as being located above the vaporized reactant outlet line opening. Does applicant intend for his Fig. 5b embodiment to be excluded from coverage by claim 37 as newly amended?

Applicant has argued that "in Ogasawara, there is not lid or "a vapor space defined between the liquid or solid reactant matter and the lid". It is noted, however, that the porous ceramic plate 22 of Fig. 1 of Ogasawara is a lid. Also, space occupied by the heat resistant fibers 23 of Ogasawara constitute a vapor space defined between the sold reactant matter and the lid. It is clear that vapor occupies and passes through the spaces between the fibers 23, and therefore the spaces between the fibers must inherently constitute "a vapor space defined between the liquid or solid reactant matter and the lid" as claimed.

Referring to Fig. 1 of Tasaki, applicant has argued that "there is no motivation to add a lid to the container 2 because a solid mass is stored on the container 2". It is noted that container 2 of Fig. 1 of Tasaki corresponds to the "second container having a gas tight container wall separate from the lid".

Applicant has further argued that in Tasaki's apparatus, the powder is melted and the cooled to form a solidified body, as taught by Tasaki at col. 3, lines 45-50. Applicant has further argued that since Tasaki teaches using a solidified body of reactant matter instead of a loose powder, there is no motivation to add a lid that is a mechanical filter as taught by Ogasawara. It is noted, however, that in the comparative example 1 of Tasaki described at col. 5, lines 45-50, Tasaki clearly teaches the use of the Fig. 1 apparatus with a first container that contains powdered solid reactant matter as in Ogasawara's apparatus. Comparative example 1 of Tasaki represents the conventional prior art process that Tasaki endeavors to improve upon. In this case, it clearly would have been obvious to one skilled in the art to modify comparative example 1 describe by Tasaki by providing a mechanical filter lid for the powdered reactant matter-containing boat to prevent the powder from dispersing as taught by Ogasawara.

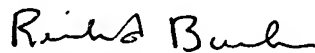
THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Richard Bueker
Primary Examiner
Art Unit 1763